Standard Review Plan Instrumentation and Controls Potential Update Topics

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AGENDA

- **9:00 a.m. Introduction**

- **9:15 a.m. SRP Update Program**
  Priorities, Schedules, and Public Interactions

- **9:30 a.m. Digital Basics, Design Certification and ITAAC**

- **9:55 a.m. Break**

- **10:05 a.m. Digital Details, Defense-In-Depth and Diversity, Important to**
  Safety, Setpoints, Communication and Isolation, Control Systems

- **11:50 a.m. Overview of I&C Sections with Administrative Changes**

- **12:00 p.m. Lunch**

- **1:00 p.m. Continue Discussion (as needed)**

PURPOSE OF MEETING

- **Provide information to the public on Standard Review Plan (SRP) updates**

- **Provide a forum for public comments on planned changes to the instrumentation and controls (I&C) portions of the SRP**

DIGITAL BASICS

- **Appendix 7.1-D – Guidance for Evaluation of Conformance to IEEE Std 7-4.3.2**

- **New Appendix**
  - **Move Discussion of IEEE Std 7-4.3.2 and RG 1.152 from Appendix 7.1-C**

- **Potential Topics**
  - **IEEE Std 7-4.3.2 and RG 1.152**
  - **IEEE 603**
  - **Software Review Lessons Learned**
  - **Commercial Grade Dedication Lessons Learned**
  - **RG 1.180 – EMI, RFI**
  - **RG 1.204 – Lightning**
  - **Soft Controls**
  - **Update References, Latest Standards, Latest RGs, Branch Names**

DIGITAL BASICS

- **BTP 7-14 – Guidance on Software reviews for Digital Computer-Based Instrumentation and Control Systems**

- **Potential Update Topics**
  - **Software Review Lessons Learned**
  - **Commercial Grade Dedication Lessons Learned**
  - **IEEE Std 7-4.3.2 and RG 1.152**
  - **RG 1.168 – Software Verification and Validation**
  - **Digital System Life Cycle Process**
  - **Update References, Latest Standards, Latest RGs, Branch Names**

DIGITAL BASICS

- **Appendix 7.1-C – Guidance for Evaluation of Conformance to IEEE Std 603**

- **Move Discussion of IEEE Std 7-4.3.2 and RG 1.152 to Appendix 7.1-D**

- **Potential Update Topics**
  - **IEEE Std 7-4.3.2 and RG 1.152**
  - **IEEE 603**
  - **RG 1.180 – EMI, RFI**
  - **RG 1.204 – Lightning**
  - **Update References, Latest Standards, Latest RGs, Branch Names**

DESIGN CERTIFICATION AND ITAAC

- **Section 14.3.5 – Instrumentation and Controls (Tier 1) - ITAAC**

- **Potential Update Topics**
  - **ITAAC Implementation under 10 CFR Part 52**
  - **Software Review Lessons Learned**
  - **Digital System Life Cycle Process**
  - **IEEE Std 7-4.3.2, RG 1.152**
  - **IEEE Std 603**
  - **Update References, Latest Standards, Latest RGs, Branch Names**

DESIGN CERTIFICATION AND ITAAC

- **BTP 7-16 – Guidance on the Level of Detail Required for Design Certification Applications Under 10 CFR Part 52**

- **Update with DG-1145**

- **Potential Update Topics**
  - **ITAAC Implementation under 10 CFR Part 52**
  - **Software Review Lessons Learned**
  - **Digital System Life Cycle Process**
  - **IEEE Std 7-4.3.2 and RG 1.152**
  - **IEEE Std 603**
  - **Defense – In – Depth and Diversity**
  - **Emerging Technology**
  - **PRA**
  - **Update References, Latest Standards, Latest RGs, Branch Names**

DIGITAL DETAILS

- **Appendix 7.0-A – Review Process for Digital Instrumentation and Control Systems**

- **Potential Update Topics**
  - ITAAC Implementation under 10 CFR Part 52
  - Software Review Lessons Learned
  - Commercial Grade Dedication Lessons Learned
  - Digital System Life Cycle Process
  - IEEE Std 7-4.3.2, RG 1.152
  - IEEE Std 603
  - Human Factors Interface
  - Soft Control
  - Update References, Latest Standards, Latest RGs, Branch Names

DIGITAL DETAILS

- **BTP 7-17 – Guidance on Self-Test and Surveillance Test Provisions**

- **Potential Update Topics**
  - **Technical Specification Changes, 10 CFR Part 50**
  - **IEEE Std 7-4.3.2, RG 1.152**
  - **IEEE 603**
  - **Update References, Latest Standards, Latest RGs, Branch Names**

DIGITAL DETAILS

- **BTP 7-18 – Guidance on the Use of Programmable Logic Logic Controllers in Digital Computer-Based Instrumentation and Control Systems**

- **Potential Update Topics**
  - **ITAAC Implementation under 10 CFR Part 52**
  - **IEEE Std 7-4.3.2, RG 1.152**
  - **IEEE Std 603**
  - **Commercial Grade Dedication Lessons Learned**
  - **Software Review Lessons Learned**
  - **Digital System Life Cycle Process**
  - **Isolation Designs**
  - **RG 1.180 – EMI, RFI**
  - **RG 1.204 - Lightning**
  - **Update References, Latest Standards, Latest RGs, Branch Names**

DIGITAL DETAILS

- **BTP 7-21 – Guidance on Digital Computer Real-Time Performance**

- **Potential Update Topics**
  - **ITAAC Implementation under 10 CFR Part 52**
  - **IEEE Std 7-4.3.2, RG 1.152**
  - **IEEE Std 603**
  - **Commercial Grade Dedication Lessons Learned**
  - **Software Review Lessons Learned**
  - **Digital System Life Cycle Process**
  - **Update References, Latest Standards, Latest RGs, Branch Names**

DIGITAL DETAILS

- **BTP 7-22 – Guidance on Digital Sampling**

- **New BTP to cover Sampling of Analog Signals for use in Computer-Based I&C Systems**

- **Potential Topics**
    - **Sample Rate**
    - **Word Length**
    - **Aliasing**
    - **Finite Word Length Error**
    - **NUREG-1709**

DIGITAL DETAILS

- **BTP 7-23 – Guidance on Digital Operating System Testing**

- **New BTP to cover Operating System Self Testing**

- **Potential Topics**
  - **Controlling and Allocation of Memory**
  - **Prioritization of the Processing of Instructions**
  - **Controlling Input and Output Devices**
  - **Management of Computer Resources**

DEFENSE-IN-DEPTH AND DIVERSITY

- **Section 7.8 – Diverse Instrumentation and Control Systems**

- **Potential Update Topics**
    - **ITAAC Implementation under 10 CFR Part 52**
    - **IEEE Std 7-4.3.2, RG 1.152**
    - **IEEE Std 603**
    - **Defense – In – Depth and Diversity**
    - **Power Uprate**
    - **Isolation Designs**
    - **Human Factors Interface**
    - **Soft Control**
    - **PRA**
    - **Update References, Latest Standards, Latest RGs, Branch Names**

DEFENSE-IN-DEPTH AND DIVERSITY

- **BTP 7-19 – Guidance for Evaluation of Defense - In - Depth and Diversity in Digital Computer-Based Instrumentation and Control Systems**

- **Potential Update Topics**
  - **ITAAC Implementation under 10 CFR Part 52**
  - **IEEE Std 7-4.3.2, RG 1.152**
  - **IEEE Std 603**
  - **Defense – In – Depth and Diversity**
  - **Commercial Grade Dedication Lessons Learned**
  - **Software Review Lessons Learned**
  - **Digital System Life Cycle Process**
  - **Emerging Technology**
  - **Human Factors Interface**
  - **Soft Control**
  - **Update References, Latest Standards, Latest RGs, Branch Names**

IMPORTANT TO SAFETY

- **BTP 7-10 – Guidance on Application of Regulatory Guide 1.97**

- **Potential Update Topics**
  - **RG 1.97 – Accident Monitoring Instrumentation**
  - **Update References, Latest Standards, Latest RGs, Branch Names**

IMPORTANT TO SAFETY

- **Section 7.5 – Information Systems Important to Safety**

- **Potential Update Topics**
    - **ITAAC Implementation under 10 CFR Part 52**
    - **RG 1.105 - Setpoints**
    - **IEEE Std 7-4.3.2, RG 1.152**
    - **IEEE Std 603**
    - **Human Factors Interface**
    - **Soft Control**
    - **RG 1.97 – Accident Monitoring Instrumentation**
    - **RG 1.177 – Risk Informed Regulation**
    - **Isolation Designs**
    - **Update References, Latest Standards, Latest RGs, Branch Names**

IMPORTANT TO SAFETY

- **Appendix 7.1-A – Acceptance Criteria and Guidelines for Instrumentation and Control Systems Important to Safety**

- **Potential Update Topics**
  - **ITAAC Implementation under 10 CFR Part 52**
  - **IEEE Std 7-4.3.2, RG 1.152**
  - **IEEE Std 603**
  - **Technical Specification Changes - 10 CFR 50.36**
  - **RG 1.180 - EMI, RFI**
  - **RG 1.204 - Lightning**
  - **RG 1.105 - Setpoints**
  - **RG 1.97 – Accident Monitoring Instrumentation**
  - **Digital Sampling (new BTP)**
  - **Digital Operating System Testing (new BTP)**
  - **Update References, Latest Standards, Latest RGs, Branch Names**

SETPOINTS

- **BTP 7-12 – Guidance on Establishing and Maintaining Instrument Setpoints**

- **Potential Update Topics**
  - **RG 1.105 – Setpoints**
  - **Graded Approach to Setpoints**
  - **IEEE Std 603**
  - **Update References, Latest Standards, Latest RGs, Branch Names**

SETPOINTS

- **Section 7.2 – Reactor Trip System**

- **Potential Update Topics**
  - **ITAAC Implementation under 10 CFR Part 52**
  - **RG 1.105 - Setpoints**
  - **IEEE Std 7-4.3.2, RG 1.152**
  - **IEEE Std 603**
  - **Update References, Latest Standards, Latest RGs, Branch Names**

SETPOINTS

- **Section 7.3 – Engineered Safety Features Systems**

- **Potential Update Topics**
  - **ITAAC Implementation under 10 CFR Part 52**
  - **RG 1.105 - Setpoints**
  - **IEEE Std 7-4.3.2, RG 1.152**
  - **IEEE Std 603**
  - **Power Uprate**
  - **Update References, Latest Standards, Latest RGs, Branch Names**

COMMUNICATION AND ISOLATION

- **Section 7.9 – Data Communications Systems**

- **Potential Update Topics**
  - **ITAAC Implementation under 10 CFR Part 52**
  - **RG 1.105 - Setpoints**
  - **IEEE Std 7-4.3.2, RG 1.152**
  - **IEEE Std 603**
  - **RG 1.180 – EMI, RFI**
  - **RG 1.204 – Lightning**
  - **Human Factors Interface**
  - **Soft Control**
  - **Isolation Designs**
  - **Security Issues**
  - **Update References, Latest Standards, Latest RGs, Branch Names**

COMMUNICATION AND ISOLATION

- **Section 9.5.2 – Communications Systems**

- **Potential Update Topics**
  - **ITAAC Implementation under 10 CFR Part 52**
  - **IEEE Std 7-4.3.2, RG 1.152**
  - **IEEE Std 603**
  - **RG 1.180 – EMI, RFI**
  - **RG 1.204 – Lightning**
  - **Human Factors Interface**
  - **Digital System Lice Cycle Process**
  - **Security Issues**
  - **Wireless Communications**
  - **Update References, Latest Standards, Latest RGs, Branch Names**

COMMUNICATION AND ISOLATION

- **BTP 7-11 – Guidance on Application and Qualification of Isolation Devices**

- **Potential Update Topics**
    - **Isolation Designs**
    - **IEEE 603**
    - **RG 1.180 – EMI, RFI**
    - **RG 1.204, Lightning**
    - **Update References, Latest Standards, Latest RGs, Branch Names**

CONTROL SYSTEMS

- **Section 7.0 – Instrumentation and Controls – Overview of Review Process**

- **Potential Update Topics**
    - **ITAAC Implementation under 10 CFR Part 52**
    - **RG 1.177 – Risk Informed Regulation**
    - **IEEE Std 7-4.3.2, RG 1.152**
    - **IEEE Std 603**
    - **Commercial Grade Dedication Lessons Learned**
    - **Reliability**
    - **Technical Specification Changes – 10 CFR 50.36**
    - **Power Uprate**
    - **Update References, Latest Standards, Latest RGs, Branch Names**

CONTROL SYSTEMS

- **Section 7.4 – Safe Shutdown Systems**

- **Potential Update Topics**
    - **ITAAC Implementation under 10 CFR Part 52**
    - **IEEE Std 7-4.3.2, RG 1.152**
    - **IEEE Std 603**
    - **Update References, Latest Standards, Latest RGs, Branch Names**

CONTROL SYSTEMS

- **Section 7.6 – Interlock Systems Important to Safety**

- **Potential Update Topics**
  - **ITAAC Implementation under 10 CFR Part 52**
  - **IEEE Std 7-4.3.2, RG 1.152**
  - **IEEE Std 603**
  - **Power Uprate**
  - **Soft Control**
  - **Update References, Latest Standards, Latest RGs, Branch Names**

CONTROL SYSTEMS

- ## Section 7.7 – Control Systems

- ## Potential Update Topics
    - ### ITAAC Implementation under 10 CFR Part 52
    - ### IEEE Std 7-4.3.2, RG 1.152
    - ### IEEE Std 603
    - ### Power Uprate
    - ### Human Factors Interface
    - ### Soft Control
    - ### Update References, Latest Standards, Latest RGs, Branch Names

ADMINISTRATIVE CHANGES

- **Section 7.1 – Instrumentation and Controls – Introduction**

- **Table 7.1-T – Acceptance Criteria and Guidelines for Instrumentation and Controls Important to Safety**

- **Appendix 7.1-B – Guidance for Evaluation of Conformance to ANSI/IEEE Std 279**

- **Appendix 7-A – Branch Technical Positions**

ADMINISTRATIVE CHANGES

- **Appendix 7-B – General Agenda, Station Site Visits**

- **Appendix 7-C – Acronyms, Abbreviations, Glossary, and Index**

- **BTP 7-1 – Guidance on Isolation of Low-Pressure Systems from the High-Pressure Reactor Coolant System**

- **BTP 7-2 – Guidance on Requirements of Motor- Operated Valves in the Emergency Core Cooling System Accumulator Lines**

ADMINISTRATIVE CHANGES

- **BTP 7-3 – Guidance on Protection System Trip Point Changes for Operation with Reactor Coolant Pumps out of Service**

- **BTP 7-4 – Guidance on Design Criteria for Auxiliary Feedwater Systems**

- **BTP 7-5 – Guidance on Spurious Withdrawals of Single Control Rods in Pressurized Water Reactors**

ADMINISTRATIVE CHANGES

- **BTP 7-6 – Guidance on Design of Instrumentation and Controls Provided to Accomplish Changeover from Injection to Recirculation Mode**

- **BTP 7-8 – Guidance for Application of Regulatory Guide 1.22**

- **BTP 7-9 – Guidance on Requirements for Reactor Protection System Anticipatory Trips**

- **BTP 7-13 – Guidance on Cross-Calibration of Protection System Resistance Temperature Detectors**